

(SNMP), World Wide Web(WWW) – Architectural overview.

Text Books

1. Andrew S. Tanenbaum, Computer Networks, 4/e, PHI (Prentice Hall India).
2. Behrouz A Forouzan, Data Communication and Networking, 4/e, Tata McGraw Hill

Reference Books

1. Larry L Peterson and Bruce S Dave, Computer Networks – A Systems Approach, 5/e, Morgan Kaufmann.
2. Fred Halsall, Computer Networking and the Internet, 5/e.
3. James F. Kurose, Keith W. Ross, Computer Networking: A Top-Down Approach, 6/e.
4. Keshav, An Engineering Approach to Computer Networks, Addison Wesley, 1998.
5. W. Richard Stevens. TCP/IP Illustrated Volume 1, Addison-Wesley, 2005.
6. William Stallings, Computer Networking with Internet Protocols, Prentice-Hall, 2004.
7. Request for Comments (RFC) Pages - IETF -<https://www.ietf.org/rfc.html>

Course Level Assessment Questions

Course Outcome1 (CO1)

1. Compare TCP/IP and OSI reference model.
2. The purpose of physical layer is to transport a raw bit stream from one machine to another. Justify.

Course Outcome2 (CO2)

1. Write the physical and transmission characteristics of Optical Fibre Cable guided transmission media.
2. The distance between the sender and receiver systems is about 200 KM. The speed of transmission is 2GB/s. Find out the propagation time?

Course Outcome3 (CO3)

1. Ethernet frames must be at least 64 bytes long to ensure that the transmitter is still going in the event of a collision at the far end of the cable. Fast Ethernet has the same 64-byte minimum frame size but can get the bits out ten times faster. How is it possible to maintain the same minimum frame size?
2. What do you mean by bit stuffing?

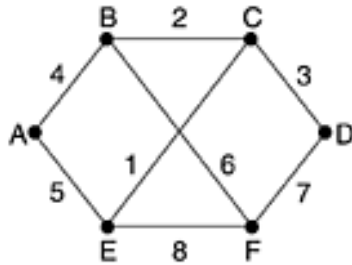
Course Outcome4 (CO4)

1. Draw and explain the frame format for Ethernet.
2. Give the differences between CSMA/CD and CSMA/CA protocol.

Course Outcome5 (CO5)

1. Consider the given subnet in which distance vector routing is used, and the vectors just come in to router C as follows: from B: (5, 0, 8, 12, 6, 2); from D: (16, 12, 6, 0, 9, 10);

and from E: (7, 6, 3, 9, 0, 4). The measured delays from C to B, D, and E, are 6, 3, and 5, respectively. What is C's new routing table? Give both the outgoing line to use and the expected delay.



2. Illustrate the leaky bucket congestion control technique.

Course Outcome 6 (CO6)

1. How do you subnet the Class C IP Address 206.16.2.0 so as to have 30 subnets. What is the subnet mask for the maximum number of hosts? How many hosts can each subnet have?
2. Give the architecture of World Wide Web.

Model Question Paper

QP CODE:

PAGES:

Reg No: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIFTH SEMESTER B.TECH DEGREE EXAMINATION, MONTH & YEAR

Course Code: CST 303

Course Name : Computer Networks

Max Marks: 100

Duration: 3 Hours

PART-A

(Answer All Questions. Each question carries 3 marks)

1. What does "negotiation" mean when discussing network protocols in a layered architecture? Give an example.

2. Define simplex, half-duplex, and full-duplex transmission modes. Give one example for each.
3. Data link protocols almost always put the CRC in a trailer rather than in a header. Why?
4. An 8-bit byte with binary value 10101111 is to be encoded using an even-parity Hamming code. What is the binary value after encoding?
5. Illustrate the Count to Infinity problem in routing.
6. Describe two major differences between the warning bit method and the Random Early Detection (RED) method.
7. The Protocol field used in the IPv4 header is not present in the fixed IPv6 header. Why?
8. How many octets does the smallest possible IPv6 (IP version 6) datagram contain?
9. Can Transmission Control Protocol(TCP) be used directly over a network (e. g. an Ethernet) without using IP? Justify your answer.
10. When Web pages are sent out, they are prefixed by MIME headers. Why?

(10x3=30)

Part B

(Answer any one question from each module. Each question carries 14 Marks)

11. (a) With a neat diagram, explain Open Systems Interconnection (OSI) Reference Model. (8)
 - (b) Compare Twisted Pair, Coaxial Cable and Optical Fibre guided transmission media. (6)
- OR**
12. (a) Consider two networks providing reliable connection-oriented service. One of them offers a reliable byte stream and the other offers a reliable message stream. Are they identical? Justify your answer. (8)
 - (b) Sketch the waveform in Manchester and Differential Manchester Encoding for the bitstream 11000110010. (6)

13. (a) A bit stream 10011101 is transmitted using the standard CRC method. The generator polynomial is $x^3 + 1$. Show the actual bit string transmitted. Suppose the third bit from the left is inverted during transmission. Show that this error is detected at the receiver's end. (8)

- (b) Explain the working of High-Level Data Link Control (HDLC) protocol. (6)

OR

14. (a) Explain the working of IEEE 802.11 MAC sublayer. (10)

- (b) Distinguish between Bridges and Switches. (4)

15. (a) Illustrate Distance Vector Routing algorithm with an example. (8)

- (b) Explain the characteristics of Routing Information Protocol (RIP). (6)

OR

16. (a) A computer on a 6-Mbps network is regulated by a token bucket. The token bucket is filled at a rate of 1 Mbps. It is initially filled to capacity with 8 megabits. How long can the computer transmit at the full 6 Mbps? (8)

- (b) Explain how routing is performed for mobile hosts. (6)

17. (a) Explain the address resolution problem using Address Resolution Protocol (ARP) and Reverse Address Resolution Protocol (RARP) with an example network. (10)

- (b) A network on the Internet has a subnet mask of 255.255.240.0. What is the maximum number of hosts it can handle? (4)

OR

18. (a) How do you subnet the Class C IP address 195.1.1.0 so as to have 10 subnets with a maximum of 12 hosts in each subnet. (6)

- (b) Draw IPv6 Datagram format and explain its features. (8)

19. (a) Distinguish the header formats of Transmission Control protocol (TCP) and User Datagram Protocol (UDP). (8)

- (b) Explain the principal Domain Name System (DNS) resource record types for (6)

IPv4.

OR

20. (a) What is the role of Simple Mail Transfer Protocol (SMTP) in E- mail? (6)
- (b) With the help of a basic model, explain the working of World Wide Web (WWW). (8)

Teaching Plan

No	Contents	No of Lecture Hrs
Module – 1 (Introduction and Physical Layer) (10 hrs)		
1.1	Introduction, Uses of computer networks.	1 hour
1.2	Network Hardware, Local Area Networks (LAN), Metropolitan Area Networks (MAN), Wide Area Networks (WAN), Wireless networks, Home networks, Internetworks.	1 hour
1.3	Network Software, Protocol hierarchies, Design issues for the layers.	1 hour
1.4	Connection-oriented and Connectionless services, Service primitives, Relationship of services to protocols.	1 hour
1.5	Reference models, The OSI reference model.	1 hour
1.6	The TCP/IP reference model, Comparison of OSI and TCP/IP reference models.	1 hour
1.7	Physical layer, Modes of communication, Simplex, Half-duplex, and Full-duplex, Physical topologies, Mesh, Star, Bus, Ring, Hybrid.	1 hour
1.8	Signal encoding, Manchester, Differential Manchester.	1 hour
1.9	Transmission media overview, Guided media (twisted pair, coaxial and fiber optic media), Unguided/wireless media (radio, microwave, and infrared).	1 hour
1.10	Performance indicators, Bandwidth (in Hertz and in Bits per Seconds),	1 hour

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
SIXTH SEMESTER B.TECH DEGREE EXAMINATION, APRIL 2018

Course Code: CS306

Course Name: COMPUTER NETWORKS (CS)

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 3 marks.

Marks

- | | | |
|---|--|-----|
| 1 | How are computer networks classified on the basis of physical size? | (3) |
| 2 | Differentiate between normal and asynchronous balanced modes of operations in HDLC. | (3) |
| 3 | What are the reasons for using Layered Architecture in Computer Networks? Define the terms protocol and interface. | (3) |
| 4 | Draw and explain the frame format for Ethernet. | (3) |

PART B

Answer any two full questions, each carries 9 marks.

- | | | |
|---|--|-----|
| 5 | a) What are the OSI service primitives for connection oriented service? | (4) |
| | b) Explain the phases in a PPP connection with the help of a transition diagram. | (5) |
| 6 | a) How collision is avoided in CSMA/CA? Describe the different strategies used for this. | (5) |
| | b) List out the key design issues that occur in Computer Networks. | (4) |
| 7 | a) Describe the ISO/OSI layered architecture with the help of a neat diagram. | (5) |
| | b) Write notes on IEEE 802.5 standard. | (4) |

PART C

Answer all questions, each carries 3 marks.

- | | | |
|----|---|-----|
| 8 | What is flooding? Describe any two situations where flooding is advantageous. | (3) |
| 9 | Compare classful and classless addressing, giving examples for both. | (3) |
| 10 | Write short note on RIP. | (3) |
| 11 | List and explain any three closed loop congestion control techniques. | (3) |

PART D

Answer any two full questions, each carries 9 marks.

- | | | |
|----|--|-----|
| 12 | a) Describe the format of IPv4 datagram with the help of a diagram, highlighting the significance of each field. | (6) |
|----|--|-----|

- b) Differentiate between static and dynamic routing. (3)
- 13 a) Explain distance vector routing with an example. (6)
- b) Define Subnetting. What are the advantages of Subnetting? Explain with an example (3)
- 14 a) Discuss the common techniques used in computer networks to improve the QoS. (4)
- b) Explain the different steps in link state routing. (5)

PART E

Answer any four full questions, each carries 10 marks.

- 15 a) Write notes on the messages and message formats used in IGMP (5)
- b) Describe the *name-address* resolution techniques used in DNS (5)
- 16 a) Write notes on MIME (5)
- b) Differentiate between BOOTP and DHCP. (5)
- 17 a) Explain how routing is done using BGP (5)
- b) Describe the operation and packet format of UDP. (5)
- 18 a) What is the use of ARP? Explain ARP operation and packet format. (7)
- b) Distinguish between partially qualified and fully qualified domain names (3)
- 19 a) Explain the three different phases in a TCP transmission with the help of diagrams. (7)
- b) List and explain the different types of error reporting messages used by ICMP. (3)
- 20 a) Explain the File Transfer Protocol (FTP) and its features. (5)
- b) Draw and explain the datagram format for IPv6. (5)

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
SIXTH SEMESTER B.TECH DEGREE EXAMINATION(R&S), MAY 2019

Course Code: CS306

Course Name: COMPUTER NETWORKS

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 3 marks.

		Marks
1	Distinguish between interface, protocol and layer in network software.	(3)
2	What are point to point and broadcast networks?	(3)
3	Draw the different frame formats in HDLC.	(3)
4	How does pure aloha and slotted aloha differ?	(3)

PART B

Answer any two full questions, each carries 9 marks.

5	a) List the design issues of layered network software.	(3)
	b) Explain WAN and communication subnet?	(3)
	c) Compare TCP/IP Reference model and OSI Reference model.	(3)
6	a) With neat diagram, explain OSI reference Model.	(6)
	b) Explain the working of CSMA/CD?	(3)
7	a) Explain how Token management is done in IEEE 802.5.	(3)
	b) Distinguish between switches and bridges.	(3)
	c) List the features of Gigabit Ethernet.	(3)

PART C

Answer all questions, each carries 3 marks.

8	List the network layer functions.	(3)
9	Differentiate between Flooding and broadcasting	(3)
10	How token bucket algorithm performs congestion control?	(3)
11	List the private IP address ranges of class A, B and C?	(3)

PART D

Answer any two full questions, each carries 9 marks.

12	a) Explain how routing is performed using link state algorithm? Illustrate with an example.	(6)
	b) Give the relevance of age field in a link state packet.	(3)
13	a) Explain any two congestion control algorithms	(5)

- b) Discuss about the routing for mobile hosts. (4)
- 14 a) What is QoS? Explain any two methods to ensure QoS. (6)
- b) Subnet the Class C IP Address 206.16.2.0 so that you have 30 subnets. (3)
- What is the subnet mask for the maximum number of hosts?
- How many hosts can each subnet have?

PART E

Answer any four full questions, each carries 10 marks.

- 15 a) How does BGP avoid count to infinity problem? (3)
- b) Draw the IPv6 fixed header format. (3)
- c) Explain the role of ICMP. (4)
- 16 a) Define address resolution problem. Explain about RARP (6)
- b) Give the importance of BOOTP. (4)
- 17 a) Discuss about the issues with IPv6 (3)
- b) Explain how IGMP supports internet multicasting (7)
- 18 a) What are port numbers, give its importance in computer communication? (3)
- b) Distinguish between TCP and UDP header format. (7)
- 19 a) How FTP handles file transfer? (3)
- b) Explain various features of MIME? (4)
- c) What is the role of SMTP in E Mail message transfer? (3)
- 20 a) Explain DNS message types (4)
- b) List the components of SNMP? (3)
- c) Explain the procedure for calculating the UDP checksum? (3)
